Reform of the Railway Sector and its Achievements

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In the last three decades, state-owned railways have been reformed in many countries.

The Japanese National Railways (JNR) was the first railway system to be divided and corporatized in 1987. In the following year, the Swedish State Railways (SJ) was reformed by introducing vertical separation, and this case had much influence on the stipulation of wider EU railway policies. Although the EU railway policies were stipulated based on regional context specificities, these policies and their results have been discussed even in some non-EU countries and have tended to have large impacts on the railway sector of those countries. Nevertheless, there are several other countries where the railways were reformed by different models and could improve the performance by certain measures such as inviting private investments, avoiding cross-subsidies among different divisions, liberalising the management of railways, and introducing intra-modal competition by an appropriate means.

The railway sector is required to compete with other modes of transport, especially roads to attain environmental regions. When it comes to railway reform, it is essential for policy makers and experts to learn lessons from other countries' experiences. Based on the background given, this issue aims to understand the lessons from past railway reforms which the sector has experienced under different circumstances. Specifically, besides railway reforms in Europe with a focus on the UK, the issue discusses railway reforms in four other countries: Japan, USA, Russia, and Mexico.

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dossier

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European Rail Policy – British Experience

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Until 1991, European rail policy accepted that rail transport was a natural monopoly provided by a single vertically integrated government owned company providing infrastructure and train operations. Starting in 1991, policy shifted towards the introduction of competition within the rail sector. This note will concentrate on the experience of Britain, whilst pointing out some key differences from other European experience.

1. Introduction

Until 1991, European rail policy accepted that rail transport was a natural monopoly provided by a single vertically integrated government owned company providing infrastructure and train operations. Legislation required that the rail company be an autonomous unit responsible for its own decision taking and finances. Where the rail company had inherited costs, for instance for pensions that a commercial organisation would not incur, the government should bear them. Where the government imposed public service obligations to provide unprofitable services or charge non commercial fares, the government should compensate the railway company. Otherwise, the railway should operate on a commercial basis.

Starting in 1991, policy shifted towards the introduction of competition within the rail sector. It was recognised that infrastructure was a natural monopoly, but argued that it was possible to have competition between alternative operators over the same infrastructure. EU legislation now requires complete open access for freight and international passenger operators (although some restriction is possible on the carriage of domestic passengers on these trains where this would damage services run under a public service contract). In order to reduce the risk of discrimination, it requires a degree of separation of infrastructure from operations, with separation of decisions on track access charges and capacity allocation from any train operating company and separate accounts. It requires an independent regulator to whom appeals can be made in the case of alleged discrimination. Only now is legislation underway which will require competitive tendering for public service contracts (but with provision for continued direct award of contracts where this process can be justified to an independent authority) and open access for commercial domestic passenger services (subject again to possible limitation where these would compete with services operated under public service contracts).

Already in 1988 Sweden had completely separated rail infrastructure and operations into separate government owned companies and most of Europe has now followed. The alternative which is still permitted is for infrastructure and operations to be separate subsidiaries of the same holding company. This was the model adopted by Germany, Italy, Austria and now France. It is argued by these railways that this permits more efficient planning of investment and use of rail capacity, although this must be done in a way which does not discriminate against other train operators.

Whilst on track competition between freight operators is now widespread in Europe, as noted above neither on track competition nor competition for public service contracts is currently required in the (domestic) passenger sector. However, competition for public service contracts is now the norm in Sweden and is rapidly spreading in Germany; in several other countries it is used for some noncore services. On track competition is also growing with two operators on key routes in Italy, Sweden and Austria and three operators on the most important route in the Czech Republic.

But it is Britain which has taken rail passenger market competition furthest. It no longer has a state owned passenger operator, with virtually all services operated by private companies under franchises awarded by means of competitive tenders. But it also has growing experience of on track competition as a result both of overlapping franchises and of new open access competitors. This note will concentrate on the experience of Britain, whilst pointing out some key differences from other European experience.

2. Rail reform in Britain

Rail reform in Britain essentially took place in the period 1994-7, although there have been significant further developments since. It has to comply with European Union legislation, although the recent decision by Britain to leave the EU means that, when that is implemented, this

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constraint may no longer apply.

By 1997, infrastructure was separated from operations and placed in a new company, Railtrack, which was privatised by sale of shares. Freight operations were split into two companies and those companies were sold. Passenger operations were divided into 25 companies and these were privatised by competitive franchising. Passenger rolling stock was placed in three separate leasing companies and these were also sold off. Infrastructure maintenance and renewal was also placed in separate companies and sold.

Thus Britain became the only country in Europe to have completely privatised its railway; elsewhere infrastructure and a large proportion of passenger services have always remained in the hands of publicly owned companies. The logic was that competition would be introduced wherever feasible in the structure, not just for all freight and (largely through competitive tendering) passenger operations but also for the leasing of rolling stock and the maintenance and renewal of infrastructure. The one element of the system that was deemed to be a natural monopoly – the planning and operation of the infrastructure – was to be regulated by a new independent regulatory body as now required by EU legislation.

Yet the success of the British approach cannot be described as other than mixed. Whilst the period since privatisation has seen rapid growth in both freight and passenger traffic (not however mainly due to the reforms), there have been considerable problems relating particularly to the efficiency of the infrastructure manager and the successful working of the franchising system. In what follows we will review experience in each of these areas in turn, before seeking to reach conclusions on the way forward.

3. The Infrastructure Manager

At first, separation and privatisation of the infrastructure manager seemed to be achieving its objectives, with efficiency improving (Smith and Nash, 2014). However, there were other signs of problems ahead. Firstly, operators, particularly smaller ones, complained that they were totally dependent on a monopoly provider of infrastructure who was unresponsive to their needs. Secondly, and more seriously, there was evidence that the condition of the infrastructure was deteriorating, with an increased incidence of faults including in particular broken rails. Thirdly, the most important upgrading to which Railtrack was contractually committed – that of the West Coast Main Line – was running late and seriously over budget.

Matters came to a head in October 2000, when a broken rail caused a fatal accident on the East Coast Main Line at Hatfield, for which Railtrack and its maintenance contractors were subsequently found to share the blame. Because Railtrack had no adequate record of the state of its assets, the management panicked and imposed severe speed limits until this could be checked and remedial action taken where necessary. The cost of this remedial action, the compensation it had to pay to train operators and the cost of the overrun on the West Coast Main Line upgrade put Railtrack into financial crisis. It appealed to government for a bail-out, but instead the government chose to place it in administration until it could be taken over by a successor company, Network Rail.

From the first, Network Rail was a curious organisation. It took the legal form of a company limited by guarantee; that is, it was a private company but without shareholders. Instead it had members, selected from the industry and the general public. The government guaranteed all its debts and therefore had powers to intervene if it was in financial difficulties. But otherwise the task of ensuring it operated efficiently fell largely on the regulator. It was argued that this was better than an old style nationalised industry, as the regulator could provide an independent view of the extent to which Network Rail could improve its performance in terms of costs and quality of service. But there is little doubt that the real reason for the choice of structure was that it enabled Network Rail's debt to be regarded as outside the public sector. This was always a controversial issue, however, and in 2014 the British Office of National Statistics decided that in fact Network Rail's debt should be treated as public sector debt. This led to an immediate change in the position of Network Rail, in that it was required to borrow from the government, its borrowing became subject to limits imposed by the government and the government itself began to seek to influence Network Rail efficiency, raising issues of overlap with the rail regulator. Indeed the government consulted on significant changes to the powers of the regulator, but in the face of serious opposition did not pursue these changes.

As has already been noted, there was a substantial increase in Network Rail expenditure after Hatfield and this continued to grow for several years (Smith and Nash, 2014). This led to serious concern on the part of the regulator; benchmarking studies suggested that Network Rail fell a long way short of the efficiency of the most efficient infrastructure managers in Europe. The regulator set tough targets for cost reduction, and although costs were reduced these targets were not met. By 2009, concern about this and the simultaneous growth of costs of passenger train operators (despite the contracts being let by competitive tendering) led to the McNulty (2011) report into the efficiency of the British rail network.

McNulty concluded that costs were at least 30% higher than they should have been, and that a major reason for this was a misalignment of incentives between the infrastructure manager and train operators. Now Britain had done more to try to overcome this misalignment than any other European country. It had a sophisticated system of track access charges which distinguished between literally hundreds of types of vehicle, designed to reflect the damage that vehicle did to the track given its weight, axleweight, unsprung mass, speed and bogie design (although despite this there had been a tendency to introduce more damaging passenger rolling stock as fleet renewal took place, perhaps as a result of the short time horizons of passenger franchisees – Nash et al, 2014). Elsewhere in Europe, track access charges are much simpler, often depending only on train kilometres with little differentiation by type of train. It also had a performance regime whereby whichever part of the railway system – infrastructure or train operator – caused delays, it had to pay compensation for them. This included delays due to track maintenance and renewal work by Network Rail. Such a performance regime is also now a requirement of European policy but most countries were much slower to introduce one and again tended to make it much simpler.

But McNulty saw other major areas in which the problem of misalignment of incentives had not been tackled. For instance, train operators generally only paid marginal cost for train operations (to the extent that there is a two part tariff for passenger franchisees, there is simply a fixed charge that is passed back to government in terms of the bid level of subsidy or premium in the franchising competition). So train operators had no incentive to assist Network Rail in reducing the total cost of the system, for instance by reducing capacity or quality requirements (for example by deferring renewals) even where this was consistent with their needs. Similarly, they had no incentive to reduce the damage done to services by track maintenance and renewals, for instance by investing in rolling stock and staff training which made diversion rather than bus replacement possible, since they would be fully compensated for increased costs and loss of revenue by Network Rail.

In the meantime, a further financial crisis has hit Network Rail. In the run-up to the 2015 general election, the government announced a big increase in rail investment, including electrification of several of the lines that remained in diesel operation. In practice, the costs and timescales for these investments also turned out to be much greater than the initial Network Rail estimates, leading to no fewer than three reviews of Network Rail being set up during 2015, the most fundamental being the Shaw report (Shaw, 2016). This reiterated the conclusion of McNulty that Network Rail should adopt a more regional structure, with only those activities which really needed to be undertaken nationally remaining at headquarters. The Network Rail regions or lines would have their own accounts facilitating benchmarking, and might even be concessioned to the private sector. McNulty had also concluded that they would need to work more closely with franchisees, possibly even forming joint ventures.

In practice the way forward has been the formation of alliances between the relevant regional management of Network Rail and the franchisee. Usually these have only covered specific activities, but in a couple of cases 'deep' alliances have been formed, with a joint management team and a sharing of costs and revenues

4. Franchising

Unlike other European countries, where franchising is only applied to subsidised services, in Britain virtually all passenger services are franchised, including commercial ones. The main exceptions are Eurostar services to the continent via the Channel Tunnel and the Heathrow Express airport service, plus a small number of other open access services which will be discussed further in the next section.

When passenger services were first franchised, the passenger services of the state owned operator, British Rail, were divided into 25 passenger companies following the internal structure of British Rail at the time. Each company served a specific geographical area and a specific type of service (inter city, London commuter or regional). The company winning the franchise took over this train operating company for the duration of the franchise. Franchises were let typically for 7-10 years, on the basis of the subsidy asked for or the premium offered for each year of the franchise. Minimum levels of service were required and some fares (commuter fares and long distance off peak fares) were regulated. Franchisees were responsible for providing rolling stock, which they usually leased.

However, several of the first round of franchises failed because of the failure to reduce costs as forecast. Subsequently, two successive winners of the East Coast franchise, withdraw early in the franchise because of the failure to achieve the forecast revenue growth. As a result, disincentives for early withdrawal were tightened, with not just a performance bond, which would be surrendered but also more substantial requirements regarding the level of financial support that would be given to the train operating company by its parent company in the event of financial difficulties.

The McNulty report favoured longer franchises, with contractualised commitments to reducing unit costs, as a way of strengthening incentives for cost reduction. However, before these changes could be implemented, the Department for Transport experienced major difficulties

with the letting of one of the most important franchises in the country – that for the West Coast Main Line. It was found to have failed to follow correctly its own procedures in awarding the franchise, and as a result the award was withdrawn and bidders compensated.

This led to two further reviews of franchising, one specifically on what changes were needed within the Department for Transport to avoid a repeat of these problems, and a wider review of franchising conducted by Richard Brown. In the meantime the letting of new franchises was halted, and existing franchises extended by direct negotiation.

The Brown report (2015) concluded that franchising should be resumed, but at a manageable pace in terms of the number let each year. Brown took a cautious approach to longer franchises, advocating a return to 7-10 year franchises, with the possibility of extensions up to 15 years, but recognising that there might be a case for longer (or shorter) franchises in specific circumstances. He advocated the government bearing risks which the train operator could not influence, and in particular adjustments in payments if GDP growth did not meet expected levels. He also argued that the penalties for early withdrawal were now so large that they were severely constraining the number of companies who had the financial strength to bid for more than one franchise, or indeed to bid at all, and that they should be eased. He saw a good case for franchising of regional services to be undertaken by regional bodies rather than national government.

This is essentially the approach now being taken to franchising. There are now 11 companies involved in rail franchising in Britain, of which four are government railways from other countries. Most of the rest are private bus companies.

As already noted, in those other countries which franchise rail services this has been confined to unprofitable services. Most franchises have been smaller and unlike in Britain there has been no obligation for the new operator to take over the staff of the former state-owned operator or to maintain its wages and conditions. As a result, it appears that franchising elsewhere has been much more successful in reducing costs.

5. Open access

Given that even commercial services are franchised, the current approach in Britain to open access for passenger operators to run services without being awarded a franchise is that these should be limited to cases where they are considered to be attracting significant new traffic to the railway rather than simply taking traffic from the franchisee. The regulator is the judge of this. There are currently two open access operators on the East Coast Main Line, both running from London to destinations not served by regular through services by the franchisee. The regulator has approved application for two further open access services, one on the East Coast main line and one on the West. In all cases, the parent of the open access operator is a major operator of franchised services (either Germany Railways or Firstgroup).

Again, this is totally unlike the situation in the other countries allowing open access competition, where commercial operations are still largely handled by the state owned company without competition for a franchise to do so. In those countries there is no explicit protection for the existing operator, although there may be many barriers to entry, such as difficulties in getting access to infrastructure, stations, depots and suitable rolling stock.

In 2016, the British Competition and Markets Authority issued a report advocating a major extension of on track competition either by easing the rules for new commercial operations to enter the market or by revising the franchising process to create more overlapping franchises (there is already some competition between adjacent franchisees who serve the same cities either by different routes or types of service). Ultimately it might be the case that commercial services would be left entirely to open access operators rather than franchised out. It considered that this would improve cost control, service quality and fares.

6. Conclusions

It will be seen that British experience of rail reform has been far from straightforward; indeed a number of serious problems have emerged. Of these, the most important is the serious cost increases that have occurred. These appear to have a number of causes, including the misalignment of incentives between train operators and infrastructure managers, and the short time horizons of train operators. Possible solutions appear to be the use of longer franchises, deep alliances including revenue and cost sharing between franchisees and Network Rail and the spread of purely commercial open access operations.

In each case, the policy is not without drawbacks. Longer franchises mean longer periods without competition. Deep alliances with the main franchisee may disadvantage freight and other passenger operators over the same tracks. More open access is difficult to accommodate in a railway short of capacity and may lead to a reduction in the quality of integration between different services running over the same tracks.

There is some evidence that the introduction of competition into the passenger sector has been more successful in the other countries that have introduced it, in particular Sweden and Germany in the case of competition for

franchises (Nash, C. A., Nilsson J. E. and Link H., 2013) and Italy in the case of on track competition (Croccolo, F., Violi, A., 2013). However, there are significant differences. As noted above, in Sweden and Germany franchises are usually shorter and have more freedom to revise wages and conditions. On track competition in Italy takes place on the new high speed network, which has plenty of spare capacity (except for some problems at terminals), and is competing against a state owned operator that has not had to compete for the right to operate on those routes. With the implementation of the Fourth Railway Package it is likely that there will be a considerable increase in competition both for and in the rail passenger market in the coming years, and more evidence will emerge on what approach works best in different circumstances.

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Reform of the Japanese National Railways (JNR)

Fumio Kurosaki*

Japan implemented a ground-breaking reform in the railway sector in 1987. The railway network was split into six vertically integrated passenger companies, and it was designed so that a single nationwide freight company accesses the network by vertical separation. Seven companies have continued the railway operation in their markets since the reform, and they will mark the 30th anniversary on 1st April 2017.

1. Introduction

In April 1987, the Japanese National Railways (JNR) underwent reform. It was divided into a single freight railway and six passenger railways (JRs). This is recognized as the first case of railway reform of a nationwide state-owned railway in modern history, implemented prior to similar reforms in other countries. Mainly because of increasing transport volume, productivity, and sustainable management of the JRs, this is considered as a successful reform of a public enterprise in the country.

2. Background of the Reform

Since the establishment of the JNR as a public enterprise in 1949, it was profitable and enjoyed a dominant status in the transport sector until the 1950s. However, competition from other modes of transport became severe, and the JNR lost its competitive edge. It also shouldered the burden of construction costs of new lines. The JNR ran a deficit in 1964, and the annual deficit continued for many subsequent years. It accumulated long-term debt each year, and at the time of reform in 1987, this debt amounted to 37.1 trillion yen, which was roughly equivalent to the combined national debts of several developing countries. Besides a substantial fall in rail use caused by rapid motorisation and the development of air transport, the JNR Reconstruction Supervision Committee posited two main reasons for the JNR's failure.

First, the JNR was a public corporation which resulted in the following problems:

a) Politicians and the government interfered in the JNR's management. For example, politicians exerted pressure to construct unprofitable new lines.

b) The JNR's administration was not autonomous. For example, the budget, personnel, and wages were stipulated by the Diet or the cabinet.

c) The relationship between managers and the workers' unions was fraught with problems. Labour unions in the JNR were unaware of costs and demanded benefits without considering wider implications.

d) Business scope was strictly limited. Rigid regulations prevented the JNR from expanding its business scope to non-railway activities.

Second, the JNR was a nationwide organisation, and the unified organisational structure throughout the country caused the following issues:

a) The size of the organisation was beyond effective management control; it was difficult for managers to effectively control the monolithic organisation. Then, employees became increasingly disloyal to the JNR, and this further hindered effective management.

b) Management was standardised. Essential issues such as fare levels, timetables and station locations were centrally planned and local conditions and requirements were not reflected in those plans.

c) Since management of the JNR was implemented on a nationwide basis, several divisions were sustained based on irrational reliance. When the reliance had become excess, ineffective divisions could be sustained. This hindered effective management and revitalisation of railway operations.

d) Managers and employees lacked the conscious of competition because no similar system existed in Japan. Although competition with other transport modes had become intense, the administration was not oriented to compete with them through flexible management.

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In addition to financial difficulties, the JNR also faced severe public criticism because of ineffective management. As a result, JNR reform had to be undertaken. The objective of the JNR reform was to solve the abovementioned issues. Accordingly, privatisation of the organisation was planned as a way to solve issues perceived to be attributable to its public enterprise status, and it was planned to divide the JNR into several companies to address issues attributable to the nationwide, monolithic nature of the organisation.

3. Outline of the JNR Reform Process

1) Establishment of JRs

The JNR was reformed in April 1987. Through this process, the railway network was divided according to regions, and six independent passenger companies were established. Although the Shinkansen Holding Corporation (SHC) (a government agency) owned the infrastructure of the Shinkansen lines at the time of reform, the passenger companies owned the assets of conventional lines. In 1991, the three passenger companies bought the Shinkansen lines infrastructure from the SHC. Thus, regarding the assets built during the JNR era, each passenger company subsequently owned the infrastructure of both the Shinkansen and conventional lines.

The JNR reform predicted that the railway operation of the three passenger companies on Japan's main island (Honshu) would be profitable. Thus, JR East, JR Central, JR West along with JR Freight started their management succeeding the JNR's liabilities. Then, as mentioned above, the three companies in Honshu purchased the infrastructure of the Shinkansen lines. As a result, these four companies held 14.5 trillion yen in total liabilities and have been, since then, carrying out their management repaying the allocated liabilities.

In contrast, it was predicted that the operation of the other three passenger railway companies on Japan's smaller island would become unprofitable. Thus, to incentivise management and avoid paying anuual subsidies, the government allocated Management Stabilization Funds to these companies. At the time of the JNR reform, JR Hokkaido, JR Shikoku and JR Kyushu received 682.2, 208.2, 387.7 billion yen respectively.

In the freight sector, a single nationwide company (JR Freight) was established since, different from the passenger sector, the general distance travelled by freight transport is much greater and freight trains usually cross the borders which demarcate the networks of divided passenger companies. Another distinct characteristic of the JNR reform was that it was designed so that JR Freight could access the trunk lines owned by the passenger companies. The background to this design of the railway reform was that freight rail transport had been unprofitable during the JNR's history. Although it was essential to cut excess cross-subsidies between the passenger and freight sectors and terminate irrational reliance between the two, it was also important to achieve sustainable management of JR Freight. Thus, JR Freight was released from infrastructure maintenance responsibilities for the purpose of reducing its operational costs. Also, track access charges were set at relatively low levels, namely 'avoidable costs,' aiming to shoulder only those inherent to freight rail transport.

2) Issues behind the JNR Reform

The JNR reform was one of the most serious items on the political agenda in Japan in the 1980s. To implement the reform, several issues needed to be solved. For example, by the 1990s, 83 unprofitable local lines had been separated from the JNR/JRs' network to make the management of JRs sustainable. However, the most serious issue had to do with long-term liabilities and surplus personnel.

As noted above, the JNR's long-term liabilities had accumulated to 37.1 trillion yen. To settle these liabilities, the government agency called the JNR Settlement Corporation (JNRSC) was established and succeeded 25.5 trillion yen. JNRSC made efforts to refund the succeeded liabilities by means such as selling shares of JRs and selling surplus land not required for railway operation. Despite its efforts, the JNRSC could not refund all the liabilities, and it dissolved in 1998. As a result, 13.8 trillion yen was transferred from JNR's long-term liability to a national debt.

Regarding the issue of surplus personnel, the JNR employed 277,020 workers as of April 1986. It was estimated that there would be approximately 93,000 excess personnel after the JNR reform. The government approached this issue by establishing a Surplus Personnel Reemployment Measures Headquarters and enacting a special law which requested active cooperation from various national sectors to employ them. As a result, the new railway companies reemployed 203,000 workers while the others changed jobs or retired.

4. Results of the JNR Reform

1) Management of JRs

The results of the JNR reform have been outstanding. The newly established JRs could focus their market and started to provide transport services appropriate for each region. Even in the freight sector, which had been loss-making in the JNR era, the serious downturn trend since the 1970s has been reversed and the traffic volume (tonne-km) has

become stable since the reform. As for the passenger sector, since the termination of the cross-subsidy to the freight sector, it has become possible to re-invest the profit to improve passenger services. Although the transport volume (passenger-km) decreased 6% in the decade prior to JNR reform, the trend changed significantly, increasing to 27%, in the decade after the reform. Furthermore, following the business model of other Japanese private railways, JR passenger companies also commenced affiliated business, actively utilising and developing the space in and around the stations. Nowadays, especially around large stations, it has become common for group firms of JR passenger companies to promote various kinds of affiliated businesses utilising the external economy associated with railway operations, and the revenue of these business activities has been increasing.

2) Privatisation of the 4 JRs

As for the three JR companies in Honshu, they have been in the black even they bear the cost of infrastructure and the burden of the allocated JNR liabilities. As planned, all shares of JR East, JR West, and JR Central were listed in 2002, 2004 and 2006 respectively. By contrast, JR Kyushu's railway operation segment has been making losses. However, the company increased their revenue through affiliated businesses and, as a whole, has been in the black. In October 2016, all shares of JR Kyushu were also listed, and its Management Stabilization Funds were liquidated by paying railway-related expenses such as the advance payment of lease fee for the Shinkansen infrastructure, which was constructed after the JNR reform. As shown by these cases, the JR companies improved rail services and developed affiliated businesses as well. Additionally, they have promoted their businesses based on the schemes planned in the JNR reform without receiving annual subsidies from the government.

5. Lessons and Future Challenges

1) Lessons: Post-Reform Improvement Factors

When we consider the positive performance of JRs, we can conclude that the JNR reform has been successful thus far. This success can mainly be attributed to privatisation and regional division, both of which solved the problems underlying JNR's failure, as noted above. This section discusses other essential issues which are distinct from typical EU railway systems.

First, the passenger railway company operates and manages both infrastructure and operation in Japan. Although there are some lines where the owner of the infrastructure is different from the railway company, the railway company maintains integrated operation even on these lines. Thus, besides a few exceptional cases, we note that passenger railway operation is integrated in Japan. This has been advantageous not only for smooth railway operations but also for coordinated investment into railway systems and promoting affiliated businesses. In Japan, on-track competition has not been introduced at all and competitive bidding has been utilised only in limited cases in recent years. Instead, the JNR reform also played a role in improving yardstick competition between the railway companies. Thus, managers and employees in the Japanese railways have sufficient motivation to increase profits as an independent (private) company with three types of competition: 1) competition with other modes of transport, 2) competition between tracks (in some sections) and 3) yardstick competition.

Second, passenger through-trains are operated with a clear separation of operational responsibilities at the border station between the companies. Through-train passenger services were common among Japanese railways and were also introduced among JRs. However, different from open access in EU countries, each company takes responsibility for both train operation and infrastructure management, as noted above. In general, drivers change at the border station and drive trains on their company's track only. As this example shows, a fundamental policy in Japanese passenger railway operation is the clear separation of operational responsibilities at the border station. This has contributed to smooth, efficient and safe passenger train operation in Japan.

2) Future Challenges

The 30th anniversary of the JNR reform is on April 2017. We can say that the management of JR companies has been sustainable so far based on the original scheme planned at the time of reform. Nevertheless, when we consider the recent changes in the transport market and the changes that are likely to occur in future, there are some challenges which the railway sector in Japan has to deal with.

Despite the positive performance of rail transport in urban areas and some inter-city lines, many local lines face severe declines in passenger numbers. Since the population in Japan will decrease in the future, local lines will become more unprofitable. Certainly, division through the JNR reform eliminated excess cross-subsidies between the divided networks. But some JRs still have a large rail network. Thus, if cross-subsidization continues within the com-

pany, even the transport services on the profitable lines would lose competitiveness because of the lack of investment funds.

As for JR Hokkaido and JR Shikoku where the average passenger transport density is lower than other JRs, they still possess Management Stabilization Funds and utilise the Fund's interest to cover railway operation losses. However, because of the low-interest rates in the Japanese financial market, the Fund's interest has not accrued the amount expected at the time of the JNR reform. Thus, management has been stringent particularly in JR Hokkaido in the last few years. If it is decided to sustain the local lines with a limited number of passengers, certain measures such as vertical separation and PSO contracts should be introduced to gain financial support from the local governments.

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Institutional Reform of Intercity Railways in the U.S.

Louis S. Thompson*

Railway institutional changes in the U.S. since the early 1970s have transformed the sector. Creation of Amtrak removed the burden of passenger losses from the freight railroads and allowed intercity passenger services to stabilize. Deregulation of the private freight railroads put the industry on a stable basis, improving earnings, increasing investment and reducing tariffs to shippers. The future of the sector depends partly on political will to support passenger services and not to re-regulate freight, and partly on the success of projects to establish new passenger services in Florida and California.

Railways employ distinct technologies: steel wheels on steel rails furnishing low rolling resistance; long, thin shape yielding low wind resistance; and, potential for electric traction with higher energy efficiency and lower carbon emissions. Railways can move high volumes within a restricted space and are extremely safe. But, rail has limited flexibility to serve areas outside its immediate reach and is less competitive at shorter distances.

The **role** of the railway is driven by the railway's capabilities, but also by its competitors and by the geographic, demographic and institutional framework within which the transport system functions. Autos are more flexible, but use more energy and land space. Trucks are flexible, do not require high volumes and move at higher speeds, but also have higher costs and impact on the environment. Airlines are fastest over long distances, but use much more energy. Above the network is the country's institutional framework, including policies toward public funding and the mix of public/private roles and the role of regulation.

The outcome is a complex pattern of technologies and services. The pattern is never fixed: technologies evolve, governments shift with political currents and the structure of the economy develops. This is especially true of the U.S., partly because of its leading role in development of transport technologies, but also because reliance on competition and private ownership fosters an unusual flexibility to change both in the transport sector and in the economy at large. Table 1 gives an overall picture of the intercity rail system in the U.S.

Railways in the U.S. carry short-haul intercity passengers

Table 1

Structure of the U.S. Intercity Rail System

		Description	Institutional Status	Source of Finances	Traffic Trends: 2014 to 1995	Issues
Amtrak	Short Haul	Low frequency, diesel hauled "day" trains	Operated by Amtrak, sometimes with contract with states served	Mostly Federal, but state subsidies in some lines	Solid growth: trip length decreasing slightly	Congress has asked for greater state role in planning and financing these services: likely to lead to greater state role in operations
	Long Haul	Low frequency, diesel hauled, overnight trains with sleepers and diners	Operated by Amtrak.	Wholly Federal	Relatively slow growth: trip length decreasing slightly	Funding stability and route structure: more service is "needed" that Congress is willing to pay for
	NEC	High frequency, higher speed (125 to 150 miles/hr, electrified)	Operated by Amtrak	Wholly Federal, Amtrak breaks even on operations, but may need capital support	Good growth, Acela doing better than Regional service.	Restructuring Amtrak organization to separate NEC performance from rest of system. Possible separation of NEC infrastructure from operations on an accounting basis
Private railroads	Freight	Diesel hauled, heavy, long trains	Owned and operated by private companies	Private and profitable: very minor Federal involvement	Good growth and solid profitability	Loss of coal and other carbon-related traffic; potential "re-regulation"

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Table 2

Statistical Picture of the U.S. Intercity Rail Transport System

	Intercity Rail Passengers (000).*										Freight Traffic**	
	Passenger Trips (000)					Passenger-Miles (000,000)					Tons	Ton-miles
	Acela	NEC Reg.	Short Haul	Long Haul	Total	Acela	NEC Reg.	Short Haul	Long Haul	Total	000,000	
1960	na	na	na	na	122,669	na	na	na	na	17,064	1,241	572,309
1965	na	na	na	na	106,283	na	na	na	na	13,260	1,387	697,878
1970	na	na	na	na	77,879	na	na	na	na	6,179	1,485	764,809
1972	na	na	na	na	13,700	na	na	na	na	4,154	1,448	776,746
1975	na	na	na	na	15,800	na	na	na	na	3,932	1,395	754,252
1980	na	na	na	na	21,219	na	na	na	na	4,504	1,492	918,958
1985	na	na	na	na	20,776	na	na	na	na	4,828	1,320	876,984
1990	na	na	na	na	22,200	na	na	na	na	6,057	1,425	1,033,969
1995	2,001	5,872	6,488	4,035	20,700	284	992	1,032	3,122	5,430	1,550	1,305,688
2000	2,408	6,113	8,023	3,911	22,500	353	950	1,304	2,759	5,365	1,738	1,465,960
2005	2,453	7,116	10,415	3,970	24,164	421	1,070	1,294	2,530	5,315	1,899	1,696,425
2010	3,219	7,149	13,627	4,678	28,717	610	1,096	1,817	2,799	6,322	1,851	1,691,004
2014	3,545	8,083	14,732	4,543	30,903	671	1,253	2,052	2,765	6,741	1,840	1,851,229
%2014 to 1995	177	138	227	113	149	236	126	199	89	124	119	142

* First full year of Amtrak operations was 1972

** Railroad deregulation passed in 1981

Sources:

Amtrak data: Amtrak Annual Reports for various years, Amtrak Monthly Peformance Summaries (author's calculations) and Surface Transportation Board Statistics of Class I Railroads

Freight data: Surface Transportation Board (or Interstate Commerce Commission), "Statistics of Class I Railroads," various years

between closely spaced cities, typically within one state, as well as long-haul intercity passenger services that often operate interstate with sleeper and diner services. At the same time, and often over the same tracks, U.S. railroads haul enormous quantities of freight. Table 2 gives an overall picture of the scale and trends of rail operations of the U.S. rail system.

Intercity passenger services in the U.S. were originally provided by private railroads. Although these services could be sustained before the advent of the automobile, this became more difficult after World War II. The ability of most families to have a car, the construction of the Interstate Highway System and the emergence of the jet airplane destroyed the intercity rail passenger market and, by 1970, passenger losses were seriously weighing on the private freight railroads.

The government's response was to create Amtrak, a federally owned corporation intended to relieve the freight railroads of all intercity rail passenger service beginning in 1971 and to revitalize passenger service under new management. Over its lifetime Amtrak has undergone continual restructuring and reorganization as Congress and the President have struggled to reach a stable definition of Amtrak's role and amounts and sources of funding.

Amtrak reports its operations in three lines of business: 25 short-haul "day" services that operate over the tracks of freight railroads (paying access fees), mostly within a single state and mostly with one train/day in each direction though some routes have multiple daily frequencies; 15 long-haul trains, mostly with diners and sleepers and mostly once-daily frequency, all of which operate over the lines of freight railroads and pay access fees; and, the Northeast Corridor between Washington, DC and Boston, MA through New York City where there are 38 higher-speed services and 48 medium speed services daily together carrying about 38% of Amtrak's passengers and generating 54% of its revenues.

By Amtrak's accounting, the long haul trains are money losers ($530 million in 2015). The short haul trains appear to be less unprofitable ($86 million in 2015) and the Northeast Corridor trains have an operating profit of about $482 million, though it is not clear what share of the cost of the infrastructure they are carrying (Amtrak, MPS). Amtrak owns and maintains most of the Northeast Corridor infrastructure and charges commuter and freight operators for access. The relative performance of the lines of business is clouded by the fact that many of the short haul trains receive state support (which Amtrak counts as revenue) and Northeast Corridor results are impacted by unclear sharing agreements with local commuter authorities and freight operators.

Whether Amtrak has been a success depends on the point of view. One objective, separating passenger losses from freight finances, was clearly achieved and, in conjunction with freight deregulation, permitted the freight railroads to remain in private hands. The success of revitalizing passenger service was not met as well: Amtrak's traffic has

not grown rapidly and its cost, at $70 billion ($2015), has been high.

The U.S. railroad freight system consists of 7 large ("Class I") freight railroads, all of which are privately owned, along with 21 smaller "regional" railroads (again all private) and some 546 small "short lines" that are mostly privately owned and operated, though some are owned by state or local authorities. The Class I railroads account for about 70% of the track-miles and 95% of the revenues of the overall U.S. rail system (AAR, 2015).

The U.S. rail freight system is an example of one of the most successful cases of institutional reform in the last four decades. In the early to mid-19th century, the railroads occupied a near-monopoly position in most markets and they were not particularly shy about exploiting their position. This, along with the flamboyant excesses of early rail investors ("Robber Barons") generated great political opposition. In 1876, the Congress created a regulator (the Interstate Commerce Commission) aimed at reining in the railroads' economic and political power.

Unfortunately, as often happens with public regulators in the political arena, the objectives were not well defined and were actually perverse in their economic impacts. Over time, the system morphed from limiting monopoly power into limiting railroads' ability to compete with highways and barges. At the same time, federal and state programs that built highways and waterways without making trucks and barges pay an appropriate share for their use began to weigh heavily on the financial performance of the private rail system. Regulatory policies to force the private railroads to cross-subsidize passenger service out of freight "profits" added insult to injury and, by 1970, much of the system was badly weakened financially.

Congress acted first to create Amtrak in order to remove the passenger support burden from the railways and put it on the federal and state governments where it belonged. Though helpful, this was not enough and by the mid-1970s, most freight railroads in the Northeast were bankrupt. In response, the Congress first nationalized the Northeast rail system and reorganized, rehabilitated and refinanced the system with public money. Then it re-privatized the system (creating Conrail). When it became clear that even this was not enough, the Congress took the final step and deregulated the railroads in 1981 (along with airlines in 1979 and trucking in 1981).

For the freight railroads, deregulation meant that, within very wide limits to control excess earnings and abuse of monopoly power over a single shipper, they could completely control the tariffs and services offered. In particular, railroads could offer contract rates to shippers in which guaranteed tariffs were offered in return for volume commitments, shipper ownership of wagons, railway or shipper investment in specialized facilities and many other terms reflecting a market-driven balance between the benefits and costs available to railway and shipper.

The results of the deregulation of rail freight were remarkable. From inception to about 2004, while traffic (ton-km) grew by 83% and the regulator's measure of return on investment grew from 3.09% to 8.46%, the average freight tariff in real terms **fell** by 58%. Although there were complaints from individual shippers (as there always are), there is little doubt that deregulation far exceeded even the most optimistic of expectations.

How did this happen? Deregulation enabled a rapid increase in productivity, mostly because contract rate-making permitted railroads to work much more closely with shippers to offer more flexible and efficient services. Output per employee grew by 434%; output per locomotive (horsepower adjusted) grew by 34%; and, traffic density (ton-miles/mile of line operated) more than tripled: the increase was driven partly by traffic growth, partly by a reduction in the miles of line operated (abandonments were made easier by deregulation), and partly because of voluntarily negotiated multiple use of lines ("trackage rights") wherein the percentage of tracks with more than one operator grew from 9% in 1981 to 28% in 2015. Over the same period, Class I railroad ownership of freight wagons fell from 66% in 1981 to less than 28% by 2015: this meant that shipper-owned equipment could be more specialized and productive while at the same time relieving railroads of the investment burden.

There were also qualitative changes in the freight system brought about by the freedom that deregulation permitted. For example, container traffic grew from about 2.7 million units in 1990 to nearly 12 million in 2014. Included in this total is traffic for J.B. Hunt, a major trucking company that purchases wholesale capacity from railroads and then markets retail container loads to its customers, many of which do not know (or care) that railroads are involved in the long-haul part of the shipment.

The tariff picture after 2004 has been more mixed because the combination of growth in rail traffic with growing congestion on the U.S. highways (partly caused by inadequate public funding of highway maintenance and construction) meant that the railroads could raise tariffs and they did so, by about 34% through 2014: this was at least partly justified by the need to finance the capacity needed to handle the traffic shifting from roads and the tariffs are still 43% below 1981 levels in real terms. Then, the financial crisis of 2008 caused a drop in traffic from which the rail system has only now fully recovered. With

this said, the current picture of the U.S. freight railroads is one of independence, adequate earnings and reasonable future prospects, subject to qualifications discussed below.

The future of passenger services is largely driven by public funding at local, state and federal levels. Unfortunately, the U.S. political system has been increasingly divided over the issue of taxes and effectiveness of governments at all levels. There are no clear prospects for political consensus on the need for passenger service in the near future (if ever). For rail freight, the chief political danger is re-regulation as demanded by various powerful shipper groups or relaxation on truck sizes and weights as demanded by truck lobbyists. Paradoxically, since the freight railroads benefit from the regulatory status quo, political inaction is their friend.

Beyond politics, there are other portents. The need to reduce carbon emissions could be critical. Although powerful political forces continue to deny the fact of climate change for ideological or self-interest reasons, there is a growing consensus that the U.S. must participate in global programs to reduce carbon emissions and the U.S. is increasingly committed by treaty to do so.

The energy efficiency of rail and the ability to use electric traction generated from low carbon sources gives rail an advantage if carbon emissions are traded or taxed. This is not an overwhelming advantage, however, as the economic cost of reducing carbon emissions by investment in rail can often be much higher than alternative programs such as LED lighting or home insulation. Carbon emission reduction is a positive result, but must be combined with other benefits such as time savings, lower tariffs, safety or noise reduction if increased spending on rail passenger service is to be justified.

Carbon reduction cuts both ways for freight. On the one hand, railways are energy efficient and thus would benefit from traffic shifted from less efficient trucks, assuming that carbon is efficiently priced. On the other hand, a large percentage of the world's carbon-based fuels are transported by rail and any carbon emission reduction program will reduce rail traffic, especially coal. Since coal makes up about 39% of U.S. rail freight traffic, and is one of the most profitable commodities, carbon reduction programs are a threat to U.S. railways unless other technologies, such as carbon capture and sequestration, are implemented.

There are good reasons to expect continued evolution of rail passenger organization in the same direction as in the past few decades. Amtrak short haul lines will increasingly be shifted to a higher share of state financing, which will ultimately cause the states to ask for a greater role in planning and operating the systems. Amtrak has tended to lose competitions for operation or maintenance contracts because of its high costs and rigid work conditions, so Amtrak's role in short haul services may well shrink. The existing Amtrak long haul lines appear to be in rough equipoise between the Congressional forces wanting service to their state or district and the budgetary forces that are reluctant to pay: except at the margin, little change is likely.

The Northeast Corridor represents about 30% of the U.S. population on 9% of its land area and most resembles areas in Europe and Asia where longer haul, higher speed rail passenger service makes economic sense. Given adequate funding (always difficult), continued upgrading and rehabilitation of the Northeast Corridor would be a good investment. The challenge will be to create a new institutional framework, possibly based on a form of infrastructure separation that would more clearly assign responsibilities for investment and operation among all the commuter, intercity passenger and freight operators that the NEC serves. It seems unlikely that a visionary new Northeast Corridor line serving exclusively high-speed trains can ever be built because of the enormous cost.

Two entirely new intercity passenger services are in prospect. All Aboard Florida is a wholly privately financed, medium-speed service that expects to start service on a three hour schedule on the 235 mile route from Miami to Orlando in 2017. About 50 miles of line between Cocoa, FL, and Orlando International Airport will be on newly constructed tracks: the remainder will be conducted on tracks of the Florida East Coast Railroad, whose parent company is the sponsor of the project. The outcome of the project, especially the ridership actually achieved, will be a significant harbinger for the potential for new private sector rail passenger projects.

The California High-Speed Rail project is the only high-speed rail project under construction in the U.S. The 220 mile/hour system will be built in stages, initially connecting San Francisco with Los Angeles and Anaheim, with connections to Sacramento and San Diego added later. The system is designed to deliver 2 hour 40 minute service between San Francisco and Los Angeles. The cost of the project has been estimated at $64 billion for San Francisco to Los Angeles/Anaheim with service to be initiated in 2028. The California High-Speed Rail Authority intends to manage the planning and construction of the system and then to contract or concession operations to a private operator.

The project has been controversial, partly because construction of a major transportation project in an inhabited (and litigious) environment always engenders opposition. More important, though, is finance. California voters approved

a bond issue in 2008 that provided about $9 billion for the system. Federal funds added another $2.9 billion. In addition, 25% of the state's receipts from its carbon trading program have been dedicated to the project. This is projected to yield around $500 million annually until 2025 when the remainder of the funding through 2050 will be monetized to yield another $5.2 billion. Finally, the Authority projects that the system will be profitable and the expected net revenue stream can be monetized in 2028 and 2029. Even so, accepting the Authority's medium demand projection leaves an uncovered gap of at least $15 billion possibly covered through new federal grant programs.

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Reform of the Railway Sector in Russia: Achievements and Challenges

Alexander Kolik*

The Russian railway system has been in the process of reform for 15 years. The introduction of the unique railway market model had solved some problems but numerous challenges still exist.

Reform background and preconditions

The Russian railway system is one of the world's largest. Russell Pittman (2013) calls it "…one of the economic wonders of the 19th, 20th, and 21st century world". Railways account for more than 85% of freight tonne-kilometers (excluding pipelines) and 27% of passenger-kilometers (Rosstat 2016). Railway transport is the backbone of the entire Russian economy. Many basic national industries (mining, metallurgy, etc.) have no alternative transport mode. It is not a surprise that for decades "railways" and "transport" were actually synonyms in everyday Russian language.

For nearly a decade the industry was not affected by the dramatic socio-economic reforms that started in Russia in 1992. The Railway Ministry (MPS – Ministerstvo Putei Soobschenija) combined the roles of service provider, policy maker, and regulator. It remained a monolithic non-transparent state monopolist amidst the developing market economy.

The declared reason was that the risk of damaging the highly integrated railway system could, in turn, harm not only Russia, but other post-soviet states for which railways had been the essential connecting link.

But in the beginning of the 2000s the enormous investment needs of the industry could not be funded at the expense of operations any more. Loss-making passenger services needed growing internal cross-subsidies. The situation demanded changes. The government recognized that competition, if introduced, could attract private capital, drive cost reduction and improve service level.

Railway reform program and initial steps

The railway reform in Russia started in 2001 after adopting the "Program for Structural Reform in Railway Transport" (Russian Federation Government 2001).

The declared goals of the reform were to introduce competition and facilitate private investment in the industry, improve the service quality, sustainability and safety, and reduce the economic costs of transportation. The program envisaged three phases.

The first phase (2001-2003) was aimed to separate the policy-making and regulatory functions from business management and operations.

To achieve this, a 100% state-owned joint-stock company "Russian Railways" (Rossiiskye Zheleznye Dorogi - RZD) was established. The "policy-making" segment of MPS was integrated into the Ministry of Transport. RZD inherited all the basic assets of MPS, while numerous non-core structures such as hospitals, schools, etc. were divested. Significant staff reduction took place. At the same time, a considerable number of new legal acts were adopted in order to prepare the transition from state-owned railway monopoly to competitive railway industry.

The second phase of the reform (2003-2005) was aimed at RZD corporate restructuring and further market-oriented legal base improvement.

During this period certain business lines and activities within the company were institutionally and legally separated. More than 40 subsidiaries were established in the segments of container transportation, reefer services, new auto transportation, rolling stock repair, etc. Phasing out of internal cross-subsidizing of passenger operations of the expense of freight started.

In the legal sphere the principle of non-discriminatory access to railway infrastructure was declared, although RZD was still the only railway carrier. New legal acts and modified tariffs encouraged private investment in freight rail-

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cars. During this period the segment of so called "wagon operators" was rapidly growing up to eventually become one of the principal components of the Russian railway market model.

The third phase of the reform (2006-2010) was planned to be a period of intensive attraction of private capital to the industry. Some of the RZD subsidiaries were to be privatized. It was planned to create a competitive market for freight transport services and, probably, long haul passenger transportation.

At the same time, within ten years of reform, after all the initial and preparatory steps described above, the model of the future railway market was not clear at all.

Reform model debates

The discussion on the railway reform model had actually begun much earlier than the 2001 Program was adopted. This discussion was far from being academic since it was a time of deep socio-economic transformations that dramatically changed the life of the whole country.

Some of the old-school experts came along with the slogan "Hands off the railways!" They argued that the MPS system, so integral and solid, was capable of surviving through hard times – probably, with a little help from the government. But any serious intervention, they said, will lead to industry collapse and economic disaster.

But the majority agreed on the necessity and inevitability of the reform and discussed the appropriate model to be chosen. The main criteria were "Not to cause economic shocks", "Not to make irreversible steps", "Not to destroy the integrity of the system". It sounded reasonable considering the dominating role of railways in freight transportation.

As is known, international practice provides two main models of competitive railway market: a) competition between vertically-integrated companies (North America) or b) separating the infrastructure management from operations to establish a platform for competition of carriers "on rails" (introduced by the EU "railway" directives).

In the course of discussion only a few voices called for straightforward choice of one of these models. Most of the experts and decision-makers agreed that some special approach was necessary - adequate to historic development of railways and the current economic situation in Russia. In this case the "American" approach of creating several independent, integrated companies to compete with each other was unanimously rejected because it led to immediate "loss of system integrity" (although some international experts admitted the possibility of horizontal separation in the European part of Russia: see, for example (ECMT 2004)). The "European" model was seen as the possible option, but its implementation was meant to be very careful and gradual.

Finally, the following formulation concerning the reform model was included in the text of the Program: "…in the course of the structural reform conditions can be created to make possible the complete organizational separation of infrastructure and operations. The appropriate decision can be taken in the light of international experience". At the same time, it was stipulated that necessary is "…to preserve the integration of infrastructure with a portion of freight operations, at least during the first years of the reform" (Russian Federation Government 2001).

As for the new competing carriers, the Program said the following: "on the basis of industrial railway transport (on-site railway operators - AK) and certain new-built local railway lines vertically integrated railway companies can be created. On the licensing basis these companies can be given the right to access the public infrastructure to carry out cargo transportation" (Russian Federation Government 2001).

Anyway, the Program was adopted, while there was no clear vision of the market model to be reached at the end. But the practical development of the reform had identified the basic principle of the new railway industry: wagon operators as the main competing market players.

Wagon operators

The first wagon operators arrived on the stage in early 2000s against a background of an acute shortage of railcars. In 1998 the railways had purchased 6680 freight wagons while in 2001 only 104 (Farid Husainov 2012). The MPS, admitting the incapability of investment in the rolling stock, suggested that big shippers should buy railcars for their cargoes in exchange for a tariff discount.

This mechanism was implemented and a growing amount of freight was transported in shippers-owned rolling stock. Soon enough the number of private wagons had exceeded the demand in many industries and the fleet owners started outsourcing their railcar companies.

The wagon operating business turned out to be very profitable due to free tariffs. Besides, wagon operators had no service obligations (unlike public railway that had to serve each registered customer) and they could choose the most attractive commodities and trade lanes. As a result, enormous investments in the wagon operating segment were made not only by shippers but also by independent finan-

cial structures as well.

The government was satisfied by the fact that private business was rapidly entering the railway transport. Some observers equated the growing competition between wagon operators to the intramodal competition declared among the reform priorities.

RZD decided to participate in this process. In 2007 the First Cargo Company was established – the RZD-daughter wagon operator with 200 thousand ex-RZD wagons. In 2010 it was followed by the Second Cargo Company (currently - Federal Cargo Company) with 175 thousand freight cars. RZD preserved a small fleet for its internal operating and maintenance needs only.

After all was finished, the freight railway market had acquired the following structure unparalleled worldwide:

- RZD as a single state-owned monopolistic railway carrier, the owner of infrastructure and the long haul locomotives. No wagons in operation. RZD manages and executes transportation, issues waybills and follows a state-regulated tariff. The tariff has commodity classes, is weight and distance based and includes the "infrastructure", the "locomotive" and the "wagon" components;

- More than 1400 wagon operators with the fleet of 1,6 million railcars offer capacity to customers together with a set of additional services (forwarding, documentation, mediation in relations with RZD, etc.). The wagon operator substracts the wagon component and charges the shipper adding the payment for his additional services.

Passenger transportation

Reforms had affected the passenger transportation as well, and their results vary greatly in different segments of this business.

The reform in the long-distance passenger segment was, probably, the most consistent one. The Federal Passenger Company (FPC) was established in 2009 as a subsidiary of the RZD. FPC owns the passenger wagon fleet (traction and infrastructure services are bought from RZD) and is legally acting as a carrier. At the same time, several independent private carriers occupy a small share of the market (about 5%), competing with FPC on the most popular routes (Moscow - St. Petersburg, Moscow - Nizhny Novgorod, Moscow - Ekaterinburg, etc.).

The economy-class services of FPC are directly government subsidized since the tariffs are regulated. This scheme had replaced the internal freight-to-passenger cross-subsidies within RZD. At the same time, the tariffs for high-class passenger services are deregulated.

The largest share in the structure of the rail passenger traffic (about 90% of passenger-kilometers) belongs to suburban (commuter) segment. It was planned to outsource this activity from RZD and to establish Regional Suburban Companies (RSC) holding the depots, rolling stock, etc. RSCs were to be owned - partly or entirely - by regional authorities. The latter were recommended by the government either to subsidize their RSCs or to set their rates at the "economic level" (Julia Panova, et al. 2014).

But in practice most of the regions could not follow these recommendations. Subsidies would have been an unbearable burden for their budgets while economic levelled suburban tariffs covering the costs would have meant the social shock for millions of passengers.

In most of the regions RSCs act as the formally established administrative structures that are just selling tickets. The assets belong to RZD which is the operator as well. But RZD can't run this business in full scale since it is formally overtaken by the regions, and the federal subsidies are terminated. Cancelling of suburban trains is common practice now; in certain regions this activity is completely frozen.

In the end of 2012 the new concept of the local passenger railway services was drafted which was aimed to tackle the mentioned problems, first of all, by passing corresponding legislation, but it is not adopted yet. In fact, the reform in suburban segment has effectively failed because of poor economic substantiation and the absence of an adequate legal base.

Reform results and remaining challenges

When the ten-year period of the 2001 Program had elapsed, the government prolonged the reform. "The Target Model of the railway freight market until 2015" was the document defining the further actions for five years. It expired on December 2015 bringing no fundamental changes to the industry. In the absence of any other governmental orders the reform can be formally considered complete.

So what are the main results achieved during these 15 years? No matter how disappointed can many observers feel with the speed and character of the reforms, it should be admitted that Russian railways had changed dramatically.

Among the positive results it should be mentioned, primarily, that the private capital had entered the industry.

About 50 billion USD in comparable prices were attracted (EBRD 2014), which solved the rolling stock shortage problem and gave good incentives to wagon-building.

The first competitive segment in the industry – wagon operating – is successfully developing. Many private wagon operators are ready and eager to develop as full-scale railway carriers. A reasonable degree of success has been achieved in the long-haul passenger segment where the carrier company is outsourced and independent operators exist.

The policy and regulatory framework was separated from railway operations. A number of legal acts had been developed in order to adapt the industry to market conditions. Particular new institutions (like independent freight carriers) are now envisaged legally, although do not exist in practice. The first timid steps were taken to deregulate both freight and passenger tariffs.The last but not the least to be mentioned here is that serious shocks were avoided. Railways were functioning sustainably enough.

But the list of unsolved problems is even longer. There is still no competition in the freight transportation sector. RZD, being the monopolist here, has no incentives to improve services and decrease costs.

Freight tariffs – even in their regulated part - are growing faster than the main shippers' prices (indexes 2014 to 2002 are 349% and 320% correspondingly) and faster than the trucking freight rates (indexes 2014 to 2002 are 349% and 270% correspondingly. All the evaluations are related to 2014 to eliminate the influence of the economic crisis of 2015. Data: Rosstat 2016). It means that one of the main declared goals - to reduce the economic costs of transportation - is not reached.

The service quality is not improving. Cargo delivery speed is low (2002 – 290 km/day, 2013 – 223 km/day. Data: RZD 2016). Freight railway services are not available for many potential "unprofitable" shippers who are simply ignored by wagon operators.

As a result, railways are losing freight in favor of road transport. The freight turnover index 2014 to 2007 is 10% for railways and 19% for trucking (Rosstat 2016). The reform in the socially sensitive suburban segment should be recognized as a complete failure. Obviously, there are still many challenges to be tackled. It appears that three main lessons should be learned to move forward.

1. The scale and economic importance of Russian railway system probably justify the careful and slow conversion. But, if so, the more important is the definite action plan. Unfortunately, the reform program had set out clear enough goals but did not contain a clear enough roadmap. Many steps in the course of the reform were done as a response to current market situation rather than according to the long-term strategy.

2. The best results were achieved in wagon operation - the segment that was fully open to market forces. It does not mean that total privatizing is the best decision but indicates the main vector of the reform strategy: steadily opening the industry to competition.

3. Some experts argue that the current crisis situation is not the best time for changes. The Institute of Natural Monopolies Research (IPEM) - the Russian research center that develops recommendations often reflecting the opinion of the "reform headquarters" – confirms that the renewed reform strategy is necessary. But "… at the same time, in the current crisis conditions, it is appropriate that this document should be aimed at «restoring order» and current problems solution, rather than at fundamental transformation" (IPEM 2016).

This mistake should not be committed. The reforms should not be frozen under any circumstances.

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Regulation, competition and performance of Mexico's freight railways

Stephen Perkins*

Mexico restructured its railways in 1995, creating a number of vertically integrated freight rail concessions. These enjoy exclusive rights to serve their territories, structured geographically to ensure competition to serve key markets and complemented by rights of access to specific parts of each other's networks. The trackage rights have not developed to the full extent foreseen in 1995, fuelling claims by some shippers that they are insufficiently protected from potential monopoly pricing abuse, leading to proposals from Congress to introduce open access provisions across the network. This paper examines the case for change in the regulation of competition based on a review of the performance and efficiency of the Mexican freight railway system today and examines options for enhancing competition.

1. Introduction

The large sunk costs that characterize investment in railways confer a considerable degree of natural monopoly to railway operators; in many situations attempting to replicate existing infrastructure to compete with an incumbent railway would be a ruinous endeavor. As a result there is a strong risk that rents can be extracted by private share-holders, through tariffs well above efficient levels, or through over-manning and excessive cost and/or poor levels of service. Regulating the industry to contain these risks is a demanding task whether the system is State-owned or private. Creating conditions for competition between train operators has proved in many circumstances to be more effective than direct regulation of tariffs; usually a combination of the two approaches is employed. Shippers will naturally lobby for measures that could reduce tariffs in their part of the market but the joint production of services that characterises rail operations makes judgement on what constitutes an efficient tariff complicated.

In Mexico, uncertainty over the performance of the railways in terms of economic welfare led to proposals in 2013 to radically change the legal framework for competition, with the potential to substantially undermine the value of the existing freight concessions. In 1995, Mexico's failing State-owned, monolithic railway company was restructured and conceded to private freight train operators. The state retains ownership of the network but track is maintained and upgraded by vertically integrated rail companies under long term concessions. The concessions were structured to provide for competition through parallel routes and source competition to key markets, through shared control of infrastructure around Mexico City and through provisions for access to the tracks of competitors on specifically identified parts of the network. Trackage rights have not developed to the extent initially envisaged, fueling claims by some shippers that tariffs in their markets are abusive and leading to the 2013 proposals to impose generalized third party access rights across the network.

This paper reviews the case for further reform in relation to competition on the basis of the performance and efficiency of the freight railways since restructuring and assesses options for enhancing competition. The paper is based on the results of work undertaken by the International Transport Forum at the OECD for Mexico's Ministry of Transport and Communications. The work was undertaken in two phases[1] by teams of experts comprising Aimee Aguilar (ITF), Paul Amos (consultant), Victor Aragonés (US FRA), Ghislain Blanchard, (Canadian Transportation Agency), William Brennan (US STB), Benoit Denis (consultant), Jorge Kohon (consultant), Russel Pittmann (US DoJ), Louis Thompson (consultant) and the author. The analysis summarized in this paper was developed by this team.

2. Reform of the Railways in 1995

The railways were nationalized in Mexico in 1937 under a post revolution policy of collectivism and to allow the State to take over responsibility for investing in a more complete national network, something that could not be financed by the indebted "National Railway", owned by

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1 ITF (2014); ITF (2015).

2 Ley Reglementaria del Servicio Ferroviario, May 1995, http://www.sct.gob.mx/informacion-general/normatividad/transporte-ferroviario-y-multimodal/leyes-federales/ .

foreign private investors. Service quality and performance remained weak, however, as a result of poor management and regulation under State ownership and operation. By the early 1990s the national railway, Ferrocarriles Nacionales de México (FNM or Ferronales), was running an annual deficit of more than half a billion US dollars and unreliable freight services were an impediment to economic development.

The remedy adopted was to break up FNM and offer concessions to run the railways. Restructuring began in 1995 with the Law on the regulation of rail services[2]. Transfer to private operators began in 1997 and was completed in 1999. Three main concessions were awarded:

- TFM, now Kansas City Southern de Mexico (KCSM);
- Ferromex;
- Ferrosur;
- Plus a number of smaller concessions (including FCCM, Coahuila-Durango and Tijuana-Tecate).

Access to Mexico City is provided by a neutral track access and terminal company (TFVM), jointly owned by KCSM, Ferromex, Ferrosur and the government. This accommodates a commuter passenger operator as well as the freight services of the concession holders.

The government sought to generate revenue from selling the concessions and received approximately USD 3 billion (2014 prices). The concessions offered were therefore long term (50 years) with exclusive rights to serve their territories (for an initial period of 30 years), with only some well-defined and limited exceptions where concessions were required to negotiate conditions for access by another concession. The most important of these "trackage rights" were for KCSM to use Ferromex tracks from Queretaro to Guadalajara (Mexico's second city) and Ferromex access to KCSM's Viborillas to Ramos Arizpe segment on the main line north to the industrial and commercial centres of Saltillo and Monterrey. Negotiations over implementation of these rights were protracted and were not settled until 2011.

In 2002, Grupo Mexico, owner of Ferromex, agreed to acquire Ferrosur but the take-over was rejected by the Federal Competition Commission (then CFC, now COFECE). In 2005, Grupo Mexico purchased Ferrosur for USD 300 million, but the acquisition was opposed by KCSM and COFECE rejected the purchase in 2006. The decision was appealed and the acquisition was permitted to go ahead by a Tribunal in 2011, with Ferromex and KCSM agreeing to terms for the exercise of access rights on critical sections of track to pave the way for approval. During the same period, KCSM was permitted to buy out the other investors in TFM and is now the primary owner. As a result, Mexico now effectively has two large rail concessions – KCSM and Ferromex/Ferrosur – along with the remaining small concessions.

A number of potential system structures were investigated in preparing for the 1995 reforms, ranging from retention of a single company to be operated by the private sector, that would have been in control of all infrastructure and train operations, to fully open access competition in which infrastructure would have been concessioned separately from train operators and all concessioned train operators would have been able to operate and compete throughout the network. The solution adopted was a hybrid approach adapted to Mexican geography and freight markets (Figure 1).

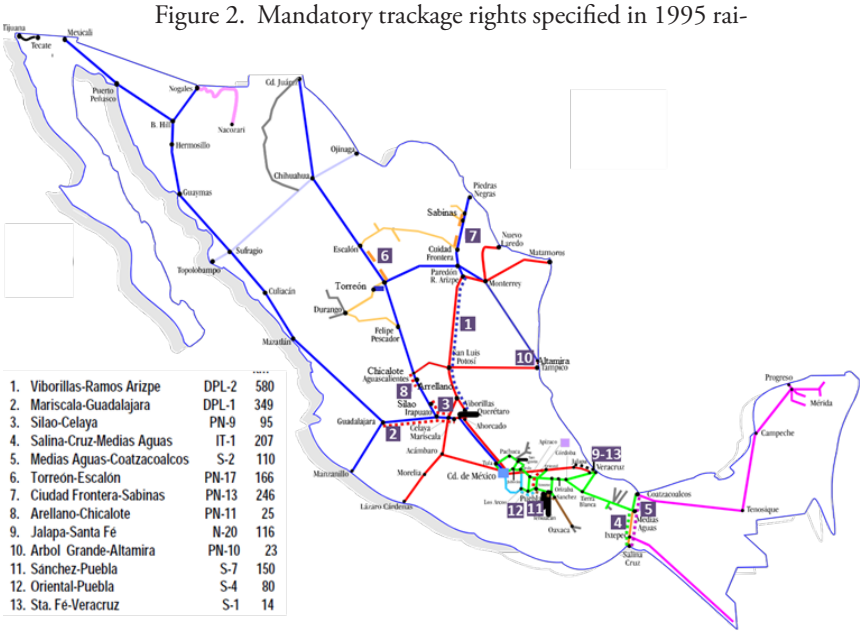
Figure 1 The concessioning structure

The structure adopted yields four types of rail-versus-rail competition (it should also be noted that there is strong competition from road haulage in many rail markets):

- Direct competition, with alternative routes to key locations (e.g. Monterrey) by two principal competing concessions.
- Side-by-side (parallel) competition, for example by Ferromex and KCSM from the U.S. border to Mexico City, or by Ferromex from the port of Manzanillo versus KCSM from the port of Lazaro Cardenas to Queretaro (and to Mexico City); plus
- Alternative source competition, for example by KCSM from the port of Lazaro Cardenas versus Ferrosur (now part of Ferromex) from the port of Veracruz, both to Mexico City.
- Mandated trackage rights, where one railway operates over the tracks of another and pays a fee for doing so in specific markets where traffic is high enough to support two operators.

About 2 161 kms of trackage rights were identified in 1995. The route length subject to trackage rights amounted to 12% of the total of 17 776 kms concessioned (Figure 2).

Figure 2. Mandatory trackage rights specified in 1995 rai-



Source: SCT.

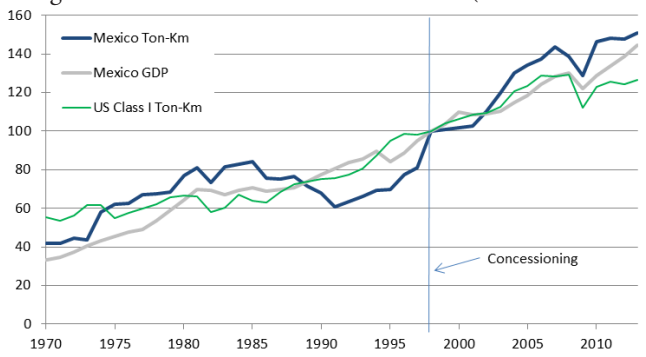
3. Performance of the Freight Railways

Since transfer to private concessions in 1998, rail tonne-kilometres have grown over 50 percent, faster than national GDP (45 percent) or US Class I freight railways (26 percent) (Figure 3). Traffic density has grown in line with traffic and labour productivity is over six times higher. Average rail freight costs have fallen by about 20 percent since concessioning (Figure 4).

Along with the US and Canada, Mexican average rail freight tariffs are the lowest in the world. Mexican and US tariffs would be essentially equal, if the US average tariffs were to be adjusted to account for the extremely low rates charged for coal (the Mexican railways transport little coal). Figure 4 shows the freight tariffs applied by FNM together with the tariffs that would have had to be charged to break even, reflecting the share of annual losses attributable to freight, as opposed to passenger operations.

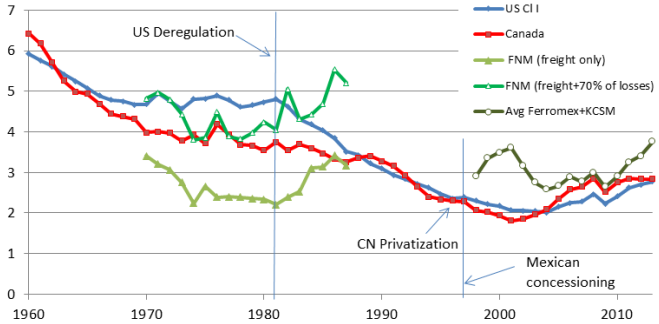
Table 1 indicates the performance of Mexican railways in 1996, under FNM management, and in 2006 and 2012 under concessioned management against the productivity indicators. The efficiency improvements are large.

Figure 3. Mexico: Rail tonne-km vs GDP (index 1998=100)



Source: STB, Statistics of Class I Railroads, various years; and SCT, Anuario Estadistico 2013.

Figure 4. Average rail freight tariffs (2012 US cents/tonne-km)



Source: ITF 2014, Freight Railway Development in Mexico, updated.

Increases in the productivity of locomotives and freight cars exceed 50%. Labour productivity has improved by 6 times as a result of the changes in operational practices, better management and investment.

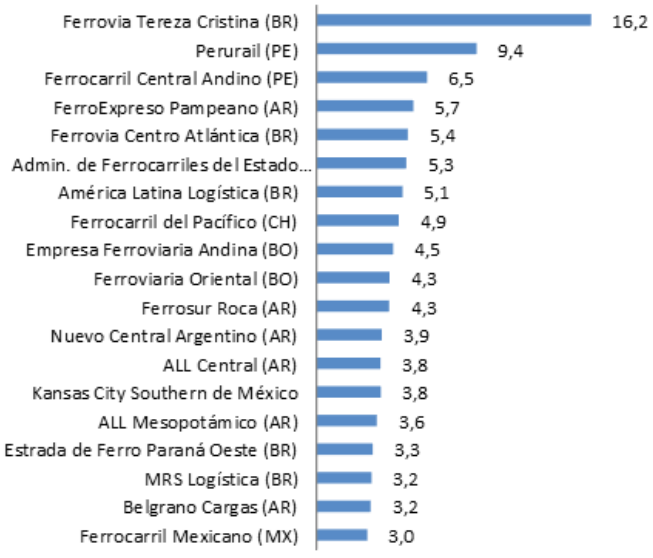
Table 1. Performance evolution of the Mexican railway system 1996-2012

Indicator	1996	2006	2012
Ton-kms per locomotive (million)	26.9	59.8	59.9
Ton-kms per freight car (million)	1.56	2.30	2.71
Ton-kms per employee (million)	0.81	5.43	5.33
Ton-kms per litre of fuel	80	107	116

Source: IMT, 2014.

Ferromex and KCSM, the largest Mexican railways, have the highest locomotive productivity among 23 non-mining railways of Latin America, leading by a clear margin. Figure 5 compares the average railway freight tariff of 18 railways in Latin America for which public information is available. Ferromex charges an average 3 U.S. cents per ton-km, the lowest tariff in the group (KCSM charges an average of about 3.8 cents per ton-km). All railways included in Figure 3.8 move general cargo traffic with the exception of MRS in Brazil, the only big mining railway (130 million tons in 2011) in the sample. Even so, MRS has higher average tariffs than Ferromex.

Figure 5. Average tariff of different railways in Latin America 2011-12 (US cents per ton-km)



Earnings data filed by Ferromex and KCSM with the US Association of American Railroads (AAR) indicate that the performance of the Mexican concessions falls within the range of US and Canadian Class I freight railroads (Table 2). Without question, the Mexican concessions have become world class performers.

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Table 2. Operating ratios of AAR members

Class I average	70.8
CN	63.3
KCSM	64.0
GTW	65.4
UP	67.3
BNSF	70.2
SOO	70.6
NS	73.0
KCS	74.2
Ferromex	75.4
CP	76.9
CSX	77.3

Note: Operating ratio is the ratio of operating expenses to operating revenues.
Source: AAR, "Railroad Facts, 2014 edition, pages 69-81.

4. Trackage Rights and Protection of Captive Shippers

Rail provides a range of bulk, container and specialized services in Mexico and faces strong competition from road haulage in most markets. It has a natural advantage carrying heavy loads on routes with high density traffic and bulk shippers such as grain, cement and steel are particularly sensitive to rail tariffs as competition from trucking is much weaker for these commodities. Mexican railway operations are fully integrated with the railways of the USA and Canada, with numerous cross-border services. Some of the most profitable services serve industrial plants, notably car manufacturing, located either side of the US border. Inward investment by US and Japanese car manufacturers in Mexico has relied on high quality rail services that enable the virtual integration of plants, with parts and semi-finished goods crossing the border several times before the final product is shipped. For international transport, rail carries the advantage over trucking of avoiding delays for inspections at the border through the use of bonded containers.

The geographical design of the rail concessions and the specification of trackage rights was structured to provide for rail on rail competition in the major markets. The

long delays already noted in the concessions reaching agreements on the terms for use of trackage rights reflect an underlying mutual preference for avoiding competition. The 1995 railway law provides for the Ministry of Transport and Communications to impose conditions where concessionaires fail to reach mutual terms in order that shippers can negotiate with competing train operators. The Ministry intervened to do this on a number of occasions but the concessions used the courts to prevent implementation of the imposed rates. The determinations were blocked by 'Amparo' – the Spanish legal term - on the grounds that they confiscated value from the rights conceded to the railways. Amparo is a legal safeguard introduced to protect businesses and individuals from arbitrary confiscation of property by the State. Judges base decisions on whether the State marshals sufficient evidence to show that its decision respects the law. In the case of economic regulation this means the intention of the law in the guiding the operation of the market and driving positive welfare outcomes. It seems most likely that the determinations of the Ministry on conditions for the exercise of trackage rights failed this test in the eyes of the judges because they were not equipped with the economic expertise and legal capacity to demonstrate conformity with the competition objectives of the law. More convincing argument and documentation might have led to a different result.

Captive shippers enjoy protections under Mexican law, with the Ministry to set tariffs in cases where the Competition Agency (COFECE) determines 'effective competition' is absent. The tests of effective competition include intermodal competition and given the extensive highway network in Mexico therefore set a relatively high hurdle. Neither the Ministry nor the Competition Agency have dedicated expertise in this field. No cases of regulated tariffs have been imposed because of an absence of effective competition to date.

These shortcomings in the capacity to make regulatory determinations led in 2013 to a legislative proposal in Congress, with cross-party support, to introduce open access provisions across the network (Gaceta 2013). Had the proposed change to the railway law been implemented as formulated, it would in all probability have severely curtailed investment in the rail network by the concessions. With the uncertainty created over revenues, and also in the management of train operations - with shippers as well as other concessions holding rights to run trains over concessioned tracks - shareholders would be extremely reluctant to put money at risk. Open access arrangements might be possible in Mexico but probably only if the government was prepared to take over a substantial share of the responsibility for funding infrastructure.

Following extensive stakeholder inquiry the Senate modified the proposed amendments to the Railway law, removing the open access provisions. It instead required the Ministry of Transport and Communications to establish a Regulatory Agency for Rail Transport (ARTF) to strengthen capacity for intervention in setting conditions for the use of trackage rights and tariffs where competition is deemed ineffective. Unfortunately the amendment adopted included a provision that the Agency should be funded within the existing financial resources of the Ministry. Given the need recognized by the Senate to substantially enhance regulatory capacity, this restriction could severely compromise delivery. Should this prove the case the first response should be to add resources in terms of qualified experts in competition economics and law. The Agency was established in 2016.

The basic economic characteristic of railways (relatively high fixed costs, and relatively low marginal costs) tend to force concentration of competition between a small number of operators rather than atomisation of competition. The need to recover fixed costs leads inevitably to some form of "Ramsey pricing" where shippers pay rates that reflect in part their elasticity of demand. This is a discriminatory but efficient pricing system for arriving at a financial sustainable optimum. For any particular service, it is rational for the firm to lower its prices as far toward variable (or marginal) costs as competitive conditions require. Pricing all services close to variable costs would not permit recovery of fixed costs. Fixed costs are recovered by charging each service or customer a rate that is as far above variable cost as possible, which generally depends on the customer's price elasticity of demand. Summed over the full set of customers, the contributions to fixed costs should be sufficient to recover total fixed costs.

Discrimination between different users requesting essentially the same services is proscribed by competition law everywhere, including in the Mexican Railway Law. This is essential for fair competition. This more general, arbitrary type of discrimination should not, however, be confused with Ramsey pricing, which is essential to maximising the benefit of the railway system to the overall economy. Trying to impose uniform tariffs or an arbitrary average contribution to fixed costs would seriously undermine efficiency and price some users off the railway.

US regulation accepts Ramsey pricing and focuses on identifying and rectifying cases in which market power has been abused. US law and related regulations contain reasonably detailed definitions of what might constitute abuse: total revenues that are more than those required to recover costs including a reasonable return on investment; prices for a shipment that exceed stand-alone costs; a revenue to marginal cost ratio greater than 180 %; inefficient

3 See for example the World Bank's Railway Reform Toolkit, https://ppiaf.org/sites/ppiaf.org/files/documents/toolkits/railways_toolkit/ch2_2_2.html

operating costs; or abrupt changes in tariffs that would cause disruption. The US definition of effective competition combined with exemptions from any regulation for contract rates and exempt services means that only about 10 percent of traffic is eligible for regulation. It has led to a wide range of average tariffs by commodity and of ratios of revenue to variable cost. The 'internationally recognised criteria and principles' that the Mexican Rail Regulatory Agency is required to adopt will need to include Ramsey pricing, acknowledging that prices can vary greatly between different categories of shipper. There is no reason to expect the differences to be any less marked than they are in the US.

5. Conclusion

The 1995 restructuring of Mexico's railways has been remarkably successful; on a par with the results of the 1981 Staggers Act reform in the USA. Financial performance of Mexico's two main concessions rivals that of US and Canadian Class 1 railways and average tariffs are at similar, low levels. Mexico's railways are the most productive in Latin America and investment since 1995 is gradually raising technical standards to those elsewhere in North America. The success of the railways has contributed significantly to economic growth and supported inward investment in critical sectors of the economy; 50% of rail freight carried in Mexico crosses the US border.

Structuring the concessions to provide for rail-on-rail competition in most key markets has been successful in improving the quality of services and reducing tariffs. Competition could and should be enhanced, however, through fuller use of trackage rights. The reason these have not been exploited to the extent envisaged in the 1995 reform is a lack of regulatory capacity in Government. Interventions by the Ministry of Transport and Communications to set access conditions and prices where concessions failed to agree terms were blocked by concessions appealing to the courts where judges were not convinced of the legitimacy of intervention, most probably because of inadequate economic argumentation and evidence. The Ministry was similarly poorly equipped to intervene to set tariffs in markets where competition might be deemed to be ineffective.

The response to this deficit has to be reinforcement of regulatory capacity and the Senate is to be congratulated for having decided in 2014 to enhance regulatory capacity by establishing a rail regulatory agency rather than imposing new open access rights on a system of what are designed to be exclusive concessions, as proposed initially by Congress. The high fixed and relatively low marginal costs of railway infrastructure make atomistic competition impossible and discriminatory pricing essential to cost recovery.

The expertise required to regulate railways efficiently has resulted in many jurisdictions in the establishment of specific regulatory agencies, which share responsibilities for competition in the railways with competition authorities. Confusion over price discrimination between different market segments on the one hand and different shippers seeking essentially the same service on the other hand is frequent, both inside and outside of Mexico. This makes the regulation of competition in railways an often controversial question. The world's most successful general cargo railways all practice price discrimination in the form of Ramsey pricing and Mexico is no exception. The challenge for the new Regulatory Agency should not be underestimated. The lessons illustrated by the legislative process in Mexico are valuable for railways everywhere.

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Managemnet of Urban Infrastructures

A Massive Open Online Course by EPFL - MIR - IGLUS

In recent years, online courses have emerged as a game changer in the educational landscape. Massive Open Online Courses (MOOCs), covering a wide variety of subject matters, are now available to practitioners, as well as academics, and continue to attract increasingly large audiences via online education platforms such as Coursera and EdX. These online courses enable learners to choose from a diverse array of subjects and to freely explore those that are most interesting to them at their own pace. The combination of the flexibility associated with online education and the high quality of courses offered by world-class universities, have turned MOOCs into an appealing learning reference for many. As a result, these courses have become particularly invaluable to those practitioners who have limited time and tight schedules restricting them from attending conventional training programs, but still feel the need to stay up to date with the cutting edge knowledge in their fields.

As of February 2016, the Chair Management of Network Industries (MIR), is offering a free online course on the Management of Urban Infrastructures as one of the products of a global action research initiative relating to the Innovative Governance of Large Urban Systems, called IGLUS. This free, and on-demand, course covers the basic principles of the management of urban Infrastructures and illustrates these principles through a deeper investigation of two of the most important urban infrastructures- the urban energy and transportation sectors.

In this online course we, at EPFL, have worked with a series of our partners in the IGLUS project, namely the World Bank, The Veolia Environment group, Swiss Post, City-Canton of Geneva, Boston Consulting Group, and City University of New York. By providing a combination of inputs from both academia and industry experts, we have tried to give a balanced overview of the basic principles of urban infrastructure management and to also illustrate how practitioners make use of these principles in the real-world.

In less than 10 months, about 9000 learners had enrolled in the course and the feedback from this large audience is quite promising (Click here to see the feedback). The online learning forum associated with this course provides us with a unique opportunity to host discussions and hear a range of diverse perspectives on the managerial issues raised in the course. People attending the course represent more than 90 different nationalities, and the debates centered around the course materials reflect this diversity and are in themselves an immense learning opportunity, both for us and our learners. You can find more information about free registration in this course by visiting the IGLUS webpage at: http://iglus.org/mooc

We are currently planning the second part of the course that is set to go online Spring 2017. The second part of the course will have a more keen focus on the Management of Urban Infrastructures in presence of disruptive innovations introduced by the ICT sector; which can be labeled as Management of Smart Urban Infrastructures.

Online courses that cover managerial, regulatory and governance issues in different network industries are becoming increasingly more prevalent. So, as of this issue of NIQ we will introduce a new section that closely follows the world of online education and reviews the currently available, and the upcoming, MOOCs that might be useful for academics and practitioners active in the field of Network Industries.

If you would like to write a review about a MOOC and publish it in an upcoming issue of NIQ, please send an email to mohamad.razaghi@epfl.ch.

networkindustries quarterly

Network Industries Quarterly, Vol. 17, issue 1, 2017 (March) "The framework for liberalisation and regulation of public utilities in countries of ex-Yugoslavia"

The forthcoming edition of Network Industries' Quarterly will be a special edition focused on countries of ex-Yugoslavia, among which two are EU member states (Slovenia and Croatia), two are in the process of accession negotiations (Montenegro, Serbia), a candidate country (Macedonia) and a potential candidate country (Bosnia and Herzegovina).

After the II World War, ex-Yugoslavia was a unique example of self-management, a specific system of governance and societal ownership of companies, including public utilities. In early 1990s, Yugoslav disintegration and democratization coincided with economic transformation from socialist-market economy to a market economy. However, legacies of the past economic system are still present in some aspect, and influence the process of liberalisation of public utilities, which was in these countries urged by joining the EU or is still urged by EU accession requirements. Market liberalisation agenda begun to come to the front, and the regulatory reform urged creation of independent regulatory agencies for state-wide public utilities such as electricity and gas markets. On the other side, municipal (communal) services are mainly provided by local authorities and public operators. Liberalisation agenda in many of these countries presupposes privatization of public undertakings or alternatives to privatization such are PPPs and concessions, and special attention will be given to the general legal framework for PPPs and concessions in the above countries.

The following are some of the issues the country contributions would try to address:

- The scope and characteristics of public undertakings providing utilities and the character of corporate governance of public utilities;
- PPPs and concessions as an "alternative" to full privatization: basic overview of active projects and reference to the legal and institutional framework for PPPs and concessions;
- Liberalisation agenda and the main issues in regulating local public utilities, such as water provision and waste management;
- The character of regulatory powers and challenges posed to municipalities in regulating communal services.

The Guest Editor of this Special Issue is Tatjana Jovanic, Associate Professor of Economic Law and Market Regulation at the University of Belgrade Faculty of Law.

If you are interested to contribute, please send an email to Ms Nadia Bert (FSR.Transport@eui.eu).

The Network Industries Quarterly carries an ISBN number and is published by Ecole Polytechnique Fédérale Lausanne (EPFL) and the Florence School of Regulation (European University Institute). Published four times a year and distributes to approx. 6000 interested subscribers worldwide, the NIQ is included in Cadmus, the EUI's Research Repository. You can find the latest issues of the NIQ here:

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- Vol 18 - no 1 - 2016 – Achievements and challenges regarding public utilities' regulation in Brazil

networkindustries quarterly

Network Industries Quarterly, Vol. 17, issue 2, 2017 (June) "Competition Policy in Energy Markets: The Experience of Emerging Economies"

The regulatory reform in developing countries took a prominent role in the 1990s. Both external and internal factors pushed many countries to liberalize their energy markets and introduce independent regulatory agencies to oversee the regulatory reforms. In the beginning, competition policy remained in the background. However, as liberalizations and regulatory reforms matured, competition policy has begun to come to the front. The advances such as technology and result-based tariff models also brought issues of anti-competitive behaviour in energy markets.

While technological and economic advances shape the new market framework, the economic literature catches up with the evolution of energy markets. For example, the competition issues created by incentive regulation models still do not get the attention they deserve.

This call for papers aims at contributing to the literature to close the gap, searching for academic contributions able to explore the major issues surrounding concurrent application of competition and regulation. The following are some of the issues we hope to address:

- The tensions between competition policy and regulation in energy markets,
- The evolution of tariff models and their relation to competition,
- Major competition investigations in the industry in the EU and US,
- Differing approaches to competition policy in both civil law and common law traditions,
- How advances in technologies affect the role of competition policy,
- The potential for deregulation in the energy markets.

We welcome proposals in the form of a short abstract of max 200 words that touch these and other issues related to competition policy in energy markets, either with a case study or a comparative approach and grounded on empirical research. The deadline for abstracts is January 30th, 2017. The final paper should not exceed 1.700 words length (all included). A preliminary draft is expected by May 28th, 2017. If you are interested to contribute, please send an email to the guest editor of this special issue on "Competition Policy in Energy Markets: The Experience of Emerging Economies", Mr Fuat Oguz (foguz@ybu.edu.tr) with a cc to Ms Nadia Bert (FSR.Transport@eui.eu).

The Network Industries Quarterly carries an ISBN number and is published by Ecole Polytechnique Fédérale Lausanne (EPFL) and the Florence School of Regulation (European University Institute). Published four times a year and distributes to approx. 6000 interested subscribers worldwide, the NIQ is included in Cadmus, the EUI's Research Repository. You can find the latest issues of the NIQ here:

- Vol 18 - no 4 - 2016 – Reform of the Railway Sector and its Achievements: global overview
- Vol 18 - no 3 - 2016 – The challenges of digitalization and the use of data
- Vol 18 - no 2 - 2016 – Financing of infrastructures in Latin America
- Vol 18 - no 1 - 2016 – Achievements and challenges regarding public utilities' regulation in Brazil

Competition and Regulation in Network Industries: a new Journal by Sage

Commencing in 2017 SAGE is delighted to be the new publisher of *Competition and Regulation in Network Industries*.

We are building on the **16-year tradition and strength** of the existing Intersentia Journal *Competition and Regulation in Network Industries*, yet strive to evolve it into an even higher quality journal. We will address the increasingly urgent challenge of governing (including regulating) complex and dynamic socio-technical systems (e.g., energy, transport, water, communication, urban systems) so as to make these systems more **efficient**, **sustainable** and **resilient**. In particular, we will take into account the fact that digitalization is rapidly pervading all infrastructures.

Network industries are caught between technological developments, evolving competition and regulation. At the same time, significant innovations – especially in the field of ICTs – offer new opportunities for infrastructure operations and governance. Exploring this combined technological and institutional dynamics between competition and regulation provides a fascinating field of research that challenges academics, managers and policy-makers alike.

The new Journal *Competition and Regulation in Network Industries* is resolutely interdisciplinary in nature, favoring articles that combine economic, legal, policy and engineering approaches. We are looking for articles that link theory with practical relevance: they should make contributions to theory and methodology development, yet always building on solid empirical research, both quantitative and qualitative. Articles that establish links between the evolving network industries are of particular interest.

Publication process:

The Journal welcomes submissions and engages in a **collaborative discussion with the authors** so as to produce the highest possible quality articles. Each article is double-blind peer reviewed. After acceptance, articles are published online on a rolling basis. 4 paper issues are published each year, containing each 4 to 6 articles.

The Journal holds an **annual conference** at the European University Institute in June each year (call for papers now open). Papers presented there are offered a fast-track review process.

Editor in chief:

Prof Matthias Finger, École Polytechnique Fédérale de Lausanne and European University Institute

Workshop by the University of Antwerp: "Ship finance in the Basel IV era"
28th February 2017 @ 2:00 pm - 4:30 pm
Auditorium BNP Paribas Fortis (Rue Royal/Koningsstraat 20, Brussels)

The shipping industry struggles with overcapacity, low freight rates, the implementation of new (environmental) regulations and a shortage of bank financing. This sector is very capital intensive. Hence, securing the funding of ships is very important. The latter is topical given the recent developments with respect to Basel IV. Basel IV involves more stringent capital requirements and greater financial disclosure.

Which impact can be expected for the shipping industry? To answer this question, the BNP Paribas Fortis Chair Transport, Logistics and Ports organizes within the EU shipping week a seminar "Ship financing in the Basel IV era".

After two keynote speeches by BNP Paribas, a leading ship financing bank, a panel discussion with people from the shipping industry, academic world and DG FISMA (speakers to be confirmed) will be scheduled. A network drink will close this event.

For further information please contact Elisabet Naert (elisabet.naert@bnpparibasfortis.com or +32 (0)2 565 63 65).

European Shipping Week: 27 February to 3 March 2017, Brussels

The first European Shipping Week took place over the course of the week of 2-6 of March 2015 and featured a variety of events. The second will take place in Brussels from Monday, 27 February to Friday, 3 March 2017 and promises to be an even greater success.

European Shipping Week is intended to be a platform where policy-makers from the main EU institutions will meet and engage with European shipowners and other stakeholders from the shipping sector. The focus is on shipping, in all its different aspects.

European Shipping Week is the brainchild of the European Community Shipowners' Associations (ECSA) and is run by a Steering Group made up of Europe's main shipping organisations as well as the European Commission and Shipping Innovation. The shipping organisations involved on the Steering Group include: ECSA; Cruise Lines International Association (CLIA) Europe; European Community Association of Ship Brokers and Agents (ECASBA); Interferry; the European Dredging Association (EuDA); the World Shipping Council (WSC); the European Transport Workers' Federation (ETF); the European Tugowners' Association (ETA); as well as the European Maritime Pilots Association (EMPA).

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Open Call For Papers

Implementation of the liberalization process has brought various challenges to incumbent firms operating in sectors such as air transport, telecommunications, energy, postal services, water and railways, as well as to new entrants, to regulators and to the public authorities.
Therefore, the Network Industries Quarterly is aimed at covering research findings regarding these challenges, to monitor the emerging trends, as well as to analyze the strategic implications of these changes in terms of regulation, risks management, governance and innovation in all, but also across, the different regulated sectors.
The Network Industries Quarterly, published by the Chair MIR (Management of Network Industry, EPFL) in collaboration with the Transport Area of the Florence School of Regulation (European University Institute), is an open access journal funded in 1998 and, since then, directed by Prof Matthias Finger.

Article Preparation

The Network Industries Quarterly is a multidisciplinary international publication. Each issue is coordinated by a guest editor, who chooses four to six different articles all related to the topic chosen. Articles must be high-quality, written in clear, plain language. They should be original papers that will contribute to furthering the knowledge base of network industries policy matters. Articles can refer to theories and, when appropriate, deduce practical applications. Additionally, they can make policy recommendations and deduce management implications.
Detailed guidelines on how to submit the articles and coordinate the issue will be provided to the selected guest editor.

Additional Information

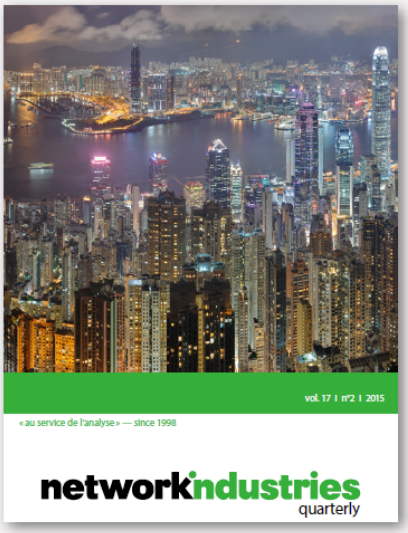
More Information

- *network-industries.org*
- *mir.epfl.ch*
- *florence-school.eu*

Questions / Comments?

Nadia Bert, Managing Editor: *nadia.bert@eui.eu*
Mohamad Razaghi, Publication Editor: *mohamad.razaghi@epfl.ch*

Published four times a year, the **Network Industries Quarterly** contains short analytical articles about postal, telecommunications, energy, water, transportation and network industries in general. It provides original analysis, information and opinions on current issues. Articles address a broad readership made of university researchers, policy makers, infrastructure operators and businessmen. Opinions are the sole responsibility of the author(s). Contact *fsr.transport@eui.eu* to subscribe. Subscription is free.



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Vol 18 - No. 3 (2016)
Regulation of Infrastructures: the challenges of digitalization and the use of data

Vol. 18 - No. 2 (2016)
Financing of infrastructures in Latin America

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Achievements and current challenges regarding public utilities' regulation in Brazil

Vol. 17 - No. 4 (2015)
Local utilities and public services in Europe: challenges and opportunities

Vol 17 - No 3 (2015)
Regulating of Infrastructure Industries in emerging countries

Vol 17 - No 2 (2015)
Urban Energy Transition

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